

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Exam: Function Reflections (Practice version 16)**

1. Let function  $f$  be defined by the polynomial below:

$$f(x) = 8x^4 + 4x^3 + 6x^2 - 9x + 5$$

Draw lines that match each function reflection with its polynomial:

**Reflections**

**Polynomials**

$f(-x)$  •

•  $-8x^4 - 4x^3 - 6x^2 + 9x - 5$

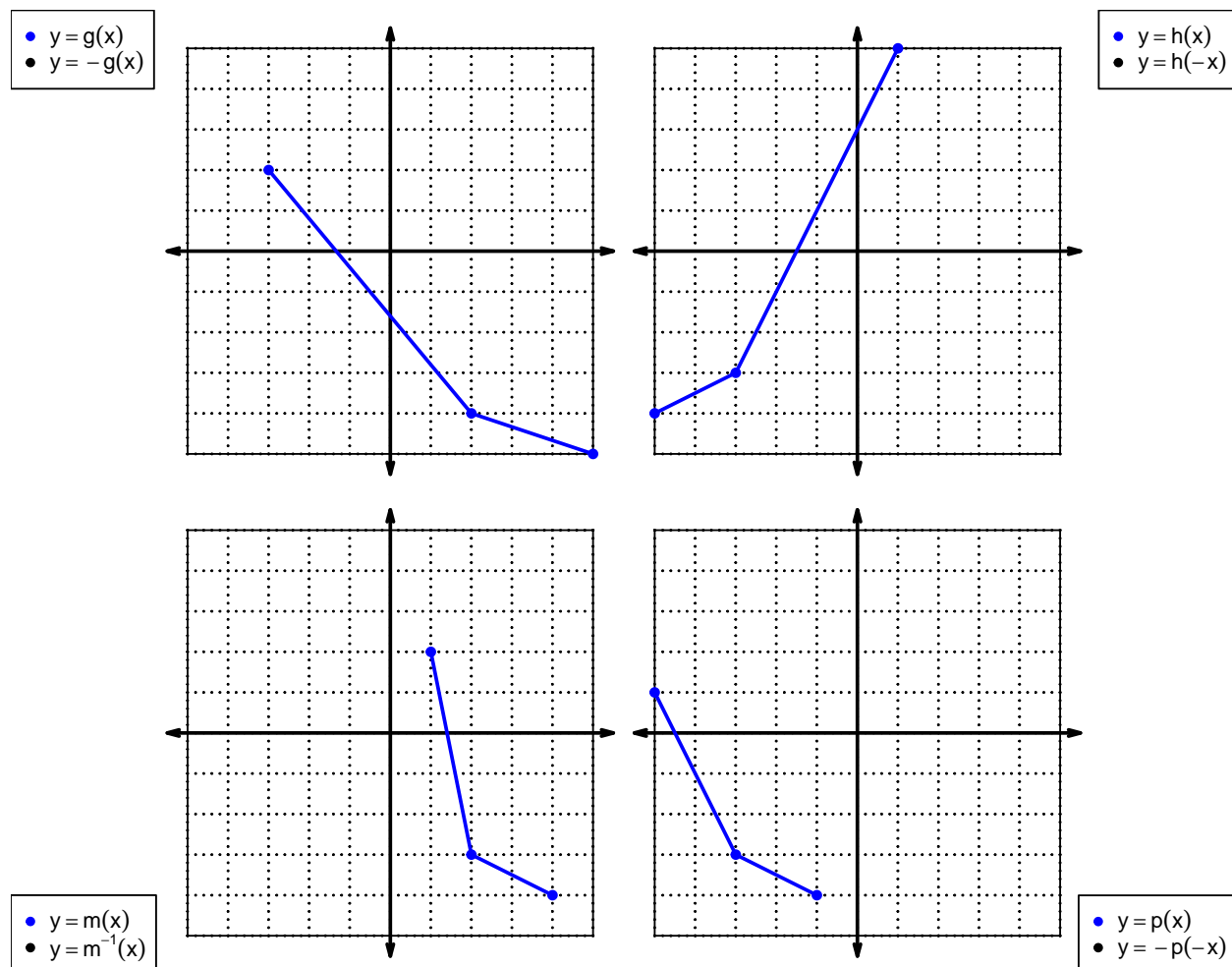
$-f(-x)$  •

•  $8x^4 - 4x^3 + 6x^2 + 9x + 5$

$-f(x)$  •

•  $-8x^4 + 4x^3 - 6x^2 - 9x - 5$

2. In each  $xy$  plane shown below, a function is graphed with blue. Draw the indicated reflections (as a second curve, indicated in legend) with black (or with whatever you have). The  $x$  axis is horizontal and the  $y$  axis is vertical (as typical), and the scale is equal on both axes.



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For all questions on this page, the functions  $f$ ,  $g$ , and  $h$  are defined by the table below.

$x$	$f(x)$	$g(x)$	$h(x)$
1	8	8	5
2	1	9	6
3	5	2	1
4	9	3	7
5	2	4	4
6	4	1	9
7	6	5	2
8	7	6	3
9	3	7	8

3. Evaluate  $h(3)$ .

4. Evaluate  $f^{-1}(4)$ .

5. By filling more rows of the table, it is possible to make function  $f$  **even**. If that were done, what would be the value of  $f(-7)$ ?

6. By filling more rows of the table, it is possible to make function  $g$  **odd**. If that were done, what would be the value of  $g(-5)$ ?

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7. A function,  $f$ , is **even** if  $f(x) = f(-x)$  for all  $x$  in the domain. A function,  $g$ , is **odd** if  $g(x) = -g(-x)$  for all  $x$  in the domain.

Let polynomial  $p$  be defined with the following equation:

$$p(x) = -x^3 + x$$

- a. Express  $p(-x)$  as a polynomial in standard form.

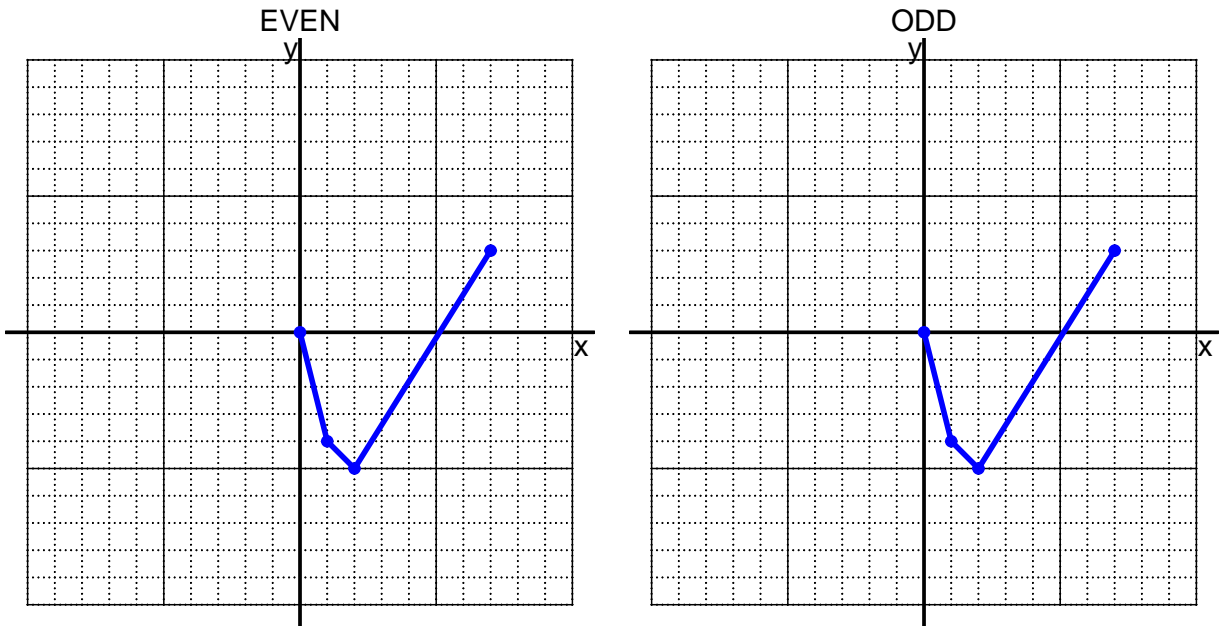
- b. Express  $-p(-x)$  as a polynomial in standard form.

- c. Is polynomial  $p$  even, odd, or neither?

- d. Explain how you know the answer to part c.

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8. I have drawn half of a function. Draw the other half to make it even or odd.



9. Let function  $f$  be defined with the equation below.

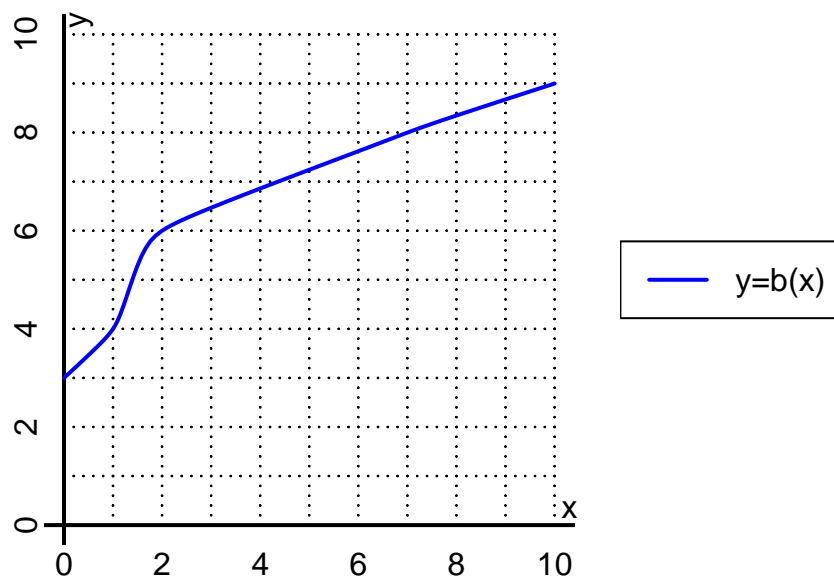
$$f(x) = 5(x - 9)$$

a. Evaluate  $f(23)$ .

b. Evaluate  $f^{-1}(25)$ .

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10. The function  $b$  is represented by the curve  $y = b(x)$  graphed below.



a. Evaluate  $b(7)$ .

b. Evaluate  $b^{-1}(6)$ .

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11. Function  $f$  is defined by the table below.

a. Complete the columns for  $-f(x)$  and  $f(-x)$  and  $-f(-x)$ .

$x$	$f(x)$	$-f(x)$	$f(-x)$	$-f(-x)$
-2	-9			
-1	7			
0	0			
1	7			
2	-9			

b. Is function  $f$  even, odd, or neither?

c. How do you know the answer to part b?